UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA ST., N.W., SUITE 3100
ATLANTA, GEORGIA 30303

Report No. 50-302/80-15

Licensee: Florida Power Corporation
3201 34th Street, South
St. Petersburg, FL 33733

Facility: Crystal River 3

Docket No. 50-302

License No. DPR-72

Inspection at Crystal River Site near Crystal River, Florida

Inspector: for S. C. Ewald — 4/17/80 Date Signed

Approved by: A. F. Gibson, Section Chief, FF&MS Branch — 4/17/80 Date Signed

SUMMARY

Inspection on March 18-21, 1980

Areas Inspected

This routine, unannounced inspection involved 39 inspector-hours onsite in the areas of radiation protection including training, outage preparations exposure control, procedures, respiratory protection, posting and labeling, and previously identified items.

Results

Of the seven areas inspected, no items of noncompliance or deviations were identified in six areas; one item of noncompliance was found in one area (Infraction - Contamination of protective clothing, ready for use, in excess of procedural limits - paragraph 12).

DETAILS

1. Persons Contacted

Licensee Employees

*D. C. Poole, Nuclear Plant Manager
*J. R. Wright, Chemical and Radiation Protection Engineer
*J. Cooper, Jr., QA/QC Compliance Manager
*W. E. Kemper, Training Manager
*G. H. Ruszala, Radwaste Management Supervisor
*G. D. Perkins, Health Physics Supervisor
*R. E. Fuller, Plant Engineer

Other licensee employees contacted included 10 technicians.

2. Exit Interview

The inspection scope and findings were summarized on March 21, 1980, with those persons indicated in Paragraph 1 above. Items discussed included one item of noncompliance, resolution of several previous items, and inspector concerns relative to worker training programs.

3. Licensee Action on Previous Inspection Findings

a. (Closed) Noncompliance (78-22-01) Failure to post High Radiation Area. The inspector reviewed the corrective steps outlined in the licensee's response of October 30, 1978. The inspector performed independent dose rate surveys and identified no unposted high radiation areas. The inspector had no further questions.

b. (Closed) Noncompliance (78-22-02) Failure to post Radiation Areas. The inspector reviewed the corrective steps outlined in the licensee's response of October 30, 1978. The inspector performed independent dose rate surveys and identified no unposted radiation areas. The inspector had no further questions.

c. (Closed) Noncompliance (79-15-01) Failure to have procedures for labeling containers of radioactive material. The inspector reviewed Health Physics Procedure RP-217, "Radioactive Material Tagging" (Rev 1, 3/6/80). The inspector had no further questions concerning the procedure.

d. (Closed) Noncompliance (79-35-01) Liquid Release in excess of Technical Specification limits. The inspector reviewed the licensee's response of October 10, 1979, outlining system modifications to preclude future similar releases. These modifications, discussed in Report 79-35, are complete with the exception of flow indication for the new RML-7 liquid effluent monitor. The radiation monitor is installed and functional with readout in the control room and the automatic isolation

capability is also functional. Installation of the flow indicating channel will be reviewed in conjunction with open item 79-35-04.

e. (Closed) Noncompliance (79-35-02) Inadequate procedures for releases from the secondary plant. The inspector reviewed procedural changes described in the licensee's response of October 10, 1979, and had no further questions.

f. (Closed) Noncompliance (79-54-01) Inadequate high radiation area locks. The inspector reviewed the licensee's responses of February 6 and 29, 1980. The inspector examined high radiation gates and locks in the Auxiliary Building and had no further questions.

g. (Closed) Noncompliance (79-54-02) Failure to review seismic effects of lead shielding on Make-up system piping. The inspector reviewed the licenseee's response of February 6, 1980 and discussed the item with radiation protection representatives. All personnel appeared to be aware of the need to perform appropriate seismic analyses prior to using shielding supported by a seismic qualified system. The inspector had no further questions.

h. (Open) Noncompliance (79-54-03) Labeling of radioactive material containers. The inspector reviewed the licensee's response of February 6 and 29, 1980 and revisions to procedure RP-217, "Radioactive Material Tagging". The inspector had no questions, however, full implementation of the revised procedure was not yet complete. The inspector stated this item would remain open pending full implementation of the revised program.

i. (Open) Unresolved Item (79-54-04) Inclusion of solid waste topics in training programs. This item is discussed in detail in paragraph8.

4. Unresolved Items

Unresolved items were not identified during this inspection.

5. Other Followup Items

a. (Closed) Primary to Secondary Leak Procedures (77-10-04). This concerned adequacy of secondary system procedures and controls for handling secondary system radioactivity resulting from steam generator tube leakage. A number of system modifications and procedural controls have been implemented in response to the presence of radioactivity in the secondary system such as rerouting of turbine building sump releases, installation of an additional liquid effluent monitor, procedure revisions, etc. The inspector had no further questions.

b. (Closed) Radiation Monitor Setpoint Controls (78-30-05). This item concerned licensee identified problems with administrative controls of monitor setpoints. Discussion with licensee representatives revealed that the problem of alarm setpoints being changed without proper

documentation has not occurred during the last year and the problem may have been the result of misunderstandings relative to the initial implementation of new setpoint controls.

c. (Open) Administrative Controls of High Radiation Gate Keys (79-54-05). A new system of keys, locks, etc., is in the process of being implemented. The new locks are onsite awaiting installation. This item will remain open pending installation of the locks and implementation of any associated administrative procedure revisions.

d. (Closed) Shipment of dewatered resin liners (79-54-03). The licensee has conducted tests of various liner dewatering schemes, documented in a report dated March 12, 1980. These tests indicated that three dewatering/blowdown cycles would provide necessary assurance that the container would meet free standing liquid limits. The inspector stated the tests and new procedures would be reviewed during the routine inspection program and had no further questions.

6. Procedures

a. Technical Specification 6.11 requires procedures for personnel radiation protection, consistant with the requirements of 10 CFR 20, be prepared, maintained, and adhered to for all operations involving personnel exposure. In addition, Technical Specification 6.8.1 requires procedures listed in Regulatory Guide 1.33 (1972), Appendix A, also be prepared, maintained, and adhered to Regulatory Guide 1.33 (1972) Appendix A, Section G, Procedures for Control of Radioactivity, lists specific procedure requirements for effluents and radiation protection.

b. The inspector reviewed changes to radiation protection procedures from January 1979 to date. In addition, the procedures listed below were reviewed in their entirety. No significant problems were identified and licensee representatives acknowledged the inspector's comments relative to minor discrepancies in one of the procedures. No items of noncompliance were identified.

- RP-101, Radiation Protection Manual (7/24/79)
- RP-106, Radiation Work Permit Procedure (5/12/78)
- RP-107, Standing Radiation Work Permit Procedure (5/12/78)
- RP-201, Personnel Exposure Documentation (10/11/79)
- RP-203, Receipt of New Fuel (10/24/79)
- RP-210, Special Radiation Protection Considerations for Females (10/11/79)

- RP-213, Pocket Dosimeter Functional Check (10/11/79)
- RP-216, Health Physics-Vendor Services Spike Program (10/11/79)
- RP-217, Radioactive Material Tagging (3/14/80)
- RP-218, Estimation of the Ci Content of Packaged Radioactive Material (10/11/79)

7. Special Preparations and Plans

The inspector discussed with the Health Physics Supervisor several changes to the dose control system that will be implemented during the refueling outage. Due to the large number of temporary workers involved in a refueling, tighter health physics control especially at access control points is exercised with respect to personnel exposure. Workers' pocket dosimeters are read and zeroed by health physics personnel who log the exposures for entry into a computer based exposure record system. In addition, vendor representatives are brought onsite to read TLD's on a more timely basis. A worker entering the radiation controlled area is issued a "Radiation Exposure Ticket" which follows the worker while inside the RCA to record pocket dosimeter readings. This ticket includes a workers' maximum remaining exposure based onsite administrative limits. Computer printouts, categorized by job function, of personnel exposures are posted at the main control point for reference by workers. To assist in implementing the more stringent health physics controls, the chem/rad staff will be augmented by contract health physics technicians. Qualification requirements for contract staff were discussed in report 79-54.

8. Training

a. The licensee is required by 10 CFR 19.12 to provide certain specific training to radiation workers. The licensee's training program consists of six to eight hours of instruction, relying to a large extent on videotapes. The inspector attended a complete training session on March 19, 1980. The inspector identified no items of noncompliance, however, numerous comments and concerns were discussed with training personnel relative to the general employee training program. These items included concerns relative to the training environment, presentation of the videotapes, discussion of contamination, solid waste minimization, and the exam. These concerns are discussed further below. Part of this training also covered respiratory protection and use of full face, air purifying respirators. This area is discussed further in paragraph 11.

b. As mentioned above, the training consisted of a series of videotape presentations with breaks and time for discussion between the tapes. The training was conducted in a trailer outside the protected area that provided seating for 30 to 40 workers. No tables were provided and the airconditioning units made the TV monitor difficult to hear. There was minimal discussion between tapes and the workers appeared to

be indifferent to the topics being presented. With the exception of a very few questions, there was no active involvement of the workers in the training process, they basically watched television for five to six hours. In general, the videotapes themselves were quite well done, especially the radiation protection tape made onsite.

The depth of coverage of fire protection and industrial safety was also good. However, the manner and environment in which the tapes were presented significantly degraded their effectiveness.

c. The coverage of contamination and solid waste was also of concern to the inspector. Contamination was a topic discussed between tapes, however, the discussion appeared to confuse the workers and seemed to be ineffective in communicating the nature of contamination and the precautions, measurements, and radiological hazards associated with it. Discussion of solid waste in general employee training programs was discussed in report no. 79-54 and left as an unresolved item (79-54-04). Based on observation of the training presentation of March 19 and discussion with the training staff, no such training is currently administered to general employees. Training representatives stated that this aspect of training is still being developed. The inspector reiterated his concerns relative to reduction of and limits on compactable trash (i.e., liquids, clean items, cleanable items) and stated inclusion of these topics in general employee training is prerequisite to any improvement in these areas. The inspector reviewed licensee commitments concerning solid waste made in their response of September 24, 1979, to IE Bulletin 79-19 and regulatory requirements concerning training and concluded that failure to address solid waste in general employee training was not an item of noncompliance or a deviation. Licensee representatives acknowledged the inspectors concerns and agreed that solid waste topic should be addressed in general training and agreed to develop this aspect of training. The inspector stated that the status of solid waste in general training would be reviewed during subsequent inspections and tracked as item 79-54-04.

d. At the conclusion of the training program, an exam is administered to serve as a means of assuring worker understanding of key topics and assessment of training program effectiveness. The same exam is administered for all training and retraining classes. During one discussion between videotapes on March 19, 1980, several specific topics, all of which were on the exam, were emphasized. Because of this discussion, and perhaps because the same exam has been repeatedly administered, the workers appeared to know what questions were going to be asked. A brief "cramming" session prior to the exam could assure a passing score. Because of these items, the inspector expressed concern that the exam had little value with respect to assessing training effectiveness. The inspector noted there are apparently no regulatory requirements for an exam, however, the inspector stated exams could be effectively used as part of the training program with several revisions to the existing format.

e. The inspector discussed the above concerns with the Training Manager and Plant Manager. The inspectors comments were acknowledged and the plant manager stated program improvements in these areas would be given appropriate attention and, for areas where corrective actions would be long term in nature (such as training environment), interim corrective steps would be taken. The inspector stated that the training program would be re-examined after implementation of any corrective steps (80-15-02).

9. Exposure Control

a. All workers entering the radiation controlled area are required to have a TLD and a self reading pocket dosimeter. Worker exposures are monitored by use of pocket dosimeter readings with periodic updates by TLD readout. As discussed in Paragraph 7, a worker's exposure is entered into a computer record system allowing rapid retrieval of required data. The inspector examined the weekly dose printout posted on March 20 and noted no exposures for the current quarter in excess of 10 CFR 20 limits. The inspector examined TLD exposure records for 1979 and found no exposures in excess of 10 CFR 20 limits and the inspector also examined 18 individual files where administrative dose extensions were required. The inspector examined 25 active worker files and verified dose histories (NRC-4), total dose, dose extensions, whole body counts, and respirator qualifications were in accordance with procedure and regulatory requirements.

b. The licensee, as a QA check, has a dosimetry "spiking" program, described in procedure RP-216. One dosimeter is exposed to a controlled amount of radiation, and a second is worn by a worker next to his assigned dosimeter. The vendor exposure report results are then correllated with the known exposure in the first case and with the workers reported exposure in the second case. The inspector reviewed the spike program results for 1979 and noted significant discrepancies had occurred. During the 1st and 4th quarters of 1979, the reported exposures were more than 20% low as compared to known dose. The Health Physics Supervisor stated these discrepancies are being examined by the vendor and that, with vendor TLD readout capability onsite during the outage, these problems can be resolved. The inspector also suggested controlled beta exposures be included in the spiking program. The Health Physics Supervisor agreed to consider beta exposures for future spikes.

10. Posting and Labeling

During tours of the Auxiliary and Turbine Buildings the inspector performed independent radiation dose rate surveys and found no unposted radiation or high radiation areas. The inspector also noted numerous bags of contaminated waste were labeled as required by 10 CFR 20. The inspector had no questions in this area.

11. Respiratory Protection

a. As discussed in paragraph 8, training for respirator users consists of a videotape addressing air-purifying respirators. If a worker will be required to wear a respirator, a medical exam is conducted including EKG, blood pressure and vital capacity measurements. The workers is then qualitatively fit tested by health physics staff using irritant smoke. The inspector observed these portions of the respirator program and had no questions.

b. In addition to air-purifying respirators, self contained breathing units (scba's) are also used when higher protection factors are necessary. The inspector questioned the Health Physics Supervisor about additional training for these workers in the specifics of scba use. The Health Physics Supervisor stated use of scba'a had been restricted to operators and chem/rad technicians. These personnel also serve on fire brigades and, thru extensive fire training programs, are fully trained in the use of scba's. The inspector commented that documentation of those qualified for scba use should be included in respirator training records.

c. The licensee also uses combination charcoal/hepa filter cannisters with the air-purifying respirators, for protection from particulates and radiodines. The inspector discussed the regulatory limitations of charcoal sorbent usage addressed in Reg Guide 8.15. The licensee assumes no protection is provided by the charcoal and MPC-hour calculations are performed appropriately. The inspector acknowledged licensee comments that MPC-hour calculations will be conservative since the charcoal will provide some variable degree of protection. The inspector had no questions relative to the manner on which charcoal sorbent filters are used by the licensee.

12. Protective Clothing

a. As discussed in paragraph 6, procedures listed in Appendix A to Reg Guide 1.33 (1972) are required to be followed by Technical Specification 6.8.1. Section G.5.d of Appendix A lists protective clothing (PC), as an area requiring procedures. These procedural requirements are addressed in section 4 of the Radiation Protection Manual, RP-101. Protective clothing is used, as specified in radiation work permits, to protect workers for contamination. Protective clothing (overalls) are generally used, laundered, surveyed, and issued for reuse. The licensee uses an installed wet laundry system when necessary, but most laundry is handled by either an inplant or vendor dry cleaning unit. Section 4.9 of RP-101 states residual contamination for laundered PC's issued for reuse must be less than 1500 counts per minute, using a standard side window G. M. tube.

b. During a tour of the Auxiliary Building an March 18, the inspector surveyed several sets of PC's on the ready to issue shelves by the reactor building personnel hatch. Radiation levels of 6 to 7 mrem/hr

were measured. The inspector notified chem/rad staff who performed thorough surveys of all PC's and identified several dozen pair with high levels of contamination. Side window G. M. tubes generally have a response of 1000 - 1500 counts per minute per mrem per hour (cpm/mr/hr). Thus the measured dose rates would correspond to approximately 6000 to 10,000 cpm. Licensee representatives investigated the laundering and surveying of these PC's and concluded they had been processed during one or two extra batches processed the previous weekend. The problem apparently stemmed form workers doing the laundry in addition to normal duties and the resulting lack of proper attention to laundry surveys. The inspector acknowledged licensee conclusions that the contaminated PC's found on March 18 were an isolated occurance and not indicative of the overall program. The inspector stated that, despite the isolated occurrence of the item, modified or additional controls were needed. The inspector stated that the PC's being issued for reuse, with contamination in excess of procedural limits, would be considered noncompliance (80-15-01) with Technical Specification 6.8.1.

c. The inspector discussed with the Health Physics Supervisor the fixed contamination limits described in RP-101, section 4.9. A limit with units of counts per minute was used to simplify surveying laundered PC's in that the workers would not be required to calculate detector efficency conversions. The basic reason for a limit on PC contamination is to keep worker exposures as low as reasonably achievable. Assuming this as a rationale for limiting contamination of PC's, the inspector commented that a limit in units of mrem/hr might be more appropriate. The Health Physics Supervisor acknowledged the inspectors comments and stated a revision of the survey technique and limits would be considered.